

CLAIMS

1. Horizontal chemical reactor, comprising:

- at least one catalytic bed (5a-5d) arranged horizontally in said reactor and comprising a lower gas-permeable wall
5 (6) for gas outlet,

- a holding element (2) of said at least one catalytic bed (5a-5d),

characterized in that it further comprises

- catalyst sealing means (20) comprising a support element
10 (21) fixed to said holding element (2) below said lower gas-permeable wall (6), a connecting element (22) fixed at one end (22a) to said support element (21) and supporting at an intermediate portion (22b) thereof a side end of the lower gas-permeable wall (6), a plurality of filling
15 elements (23) of predetermined size; which are arranged between the side end of the lower gas-permeable wall (6) and an inner wall of said holding element (2) and supported by said connecting element (22) at a portion (22c) thereof protruding from said intermediate portion (22b) towards
20 said inner wall of the holding element (2).

2. Reactor according to claim 1, characterized in that the connecting element (22) is "L shaped".

3. Reactor according to claim 1, characterized in that the connecting element (22) is fixed in a removable manner to
25 the support element (21).

4. Reactor according to claim 3, characterized in that the said one end (33a) of the connecting element (22) is inserted in an aperture (21a) of the support element (21).

5. Reactor according to claim 1, characterized in that the
30 filling elements (23) comprise inert balls, such as ceramic balls, or metallic balls.

6. Reactor according to claim 1, characterized in that the filling elements (23) are covered by a suitable wire mesh (24).

7. Reactor according to claim 1, wherein the holding 5 element (2) is a cartridge arranged within the reactor.

8. Reactor according to claim 1, characterized in that the holding element is an external shell (2) of the reactor of substantially cylindrical shape, and in that it comprises:

10 - at least two catalytic beds (5a-5d) arranged horizontally and side by side in said shell (2) and comprising said lower gas-permeable wall (6) for gas outlet,

- at least one chamber (10a-10c) extending between said at least two catalytic beds (5a-5d) and accessible from the outside of the shell (2),

15 - a fluid path for the gases flowing between said beds (5a-5d) defined in said at least one chamber (10a-10c) between opposed passages (12a,13a-12c,13c) for gas inlet and outlet, and

20 - cooling means (14) housed in a removable manner in said at least one chamber (10a-10c) for indirect cooling of the gases flowing between said beds (5a-5d).

9. Reactor according to claim 8 characterized in that said at least two catalytic beds (5a-5d) are adjacent.

10. Reactor according to claim 8 characterized in that it 25 also comprises a plurality of air spaces (9a-9h) for passage of the gases from and to said beds (5a-5d) defined between the internal wall of the shell (2) and opposed upper and lower surfaces (7,6) of said beds.

11. Reactor according to claim 10 characterized in that 30 said passages (12a,13a-12c,13c) for gas inlet to and outlet

from said at least one chamber (10a-10c) are open in correspondence of said air spaces (9a-9h).

12. Reactor according to claim 8 characterized in that said at least one chamber (10a-10c) is substantially cylindrical
5 in shape.

13. Reactor according to claim 8 characterized in that said cooling means comprise at least one boiler (14) for high thermal level steam generation.

14. Reactor according to claim 8 characterized in that said
10 boiler (14) is of the tube nest or bayonet type.

15. Reactor according to claim 14 characterized in that said boiler (14) is of the natural or forced circulation type.

16. Reactor according to claim 8 characterized in that said
15 cooling means comprise at least one gas/gas heat exchanger (14).